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Spreadsheet Integration and Hyperion Smart View

Spreadsheet integration features to consider when evaluating BI suites and evaluation of Hyperion Smart View

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Spreadsheet integration features to consider when evaluating a BI suite

Microsoft Excel is unofficially the leading BI tool. Business intelligence teams have tried to ignore it and sometimes disable it, because it can wreak havoc on the one thing a data warehouse is supposed to provide: a single version of truth. Yet users are passionate about spreadsheet integration, and it is the preferred interface for power users. The issue for BI teams and businesses, then, is how facilitate the integration while managing its use. In the past, "integration" was often limited to a one-time export. More recently, BI vendors have taken new approaches to spreadsheet integration in ways that allow Excel and the BI environment to work better together, perhaps even extending BI's reach. As well, integration has moved beyond just the Excel spreadsheet to include other Microsoft Office applications as well.

This report explores the various reasons why spreadsheet integration is important in evaluating a BI suite, the different approaches to achieving such integration, and individual criteria to consider.

Evaluation Methodology

BIScorecard evaluates vendor products with the view of a customer who wishes to buy a full BI suite or integrated toolset. Products are evaluated according to major functional areas ranging from query and reporting to architecture and administration. Within each functional area, I score vendors on various features. This list of criteria is based on:

- Features that customers often look for in evaluations

- Unique capabilities identified while evaluating products

- Vendor marketing claims that are either a point of differentiation or confusion

To evaluate products, I rely on vendor briefings and customer feedback. To ensure an objective, consistent comparison of products, I also evaluate the software hands-on. Because I seldom have the benefit of days or weeks of training (that I hope a typical customer would invest in), this does pose a challenge in evaluating more complex products. When a task is not apparent via the menus or online help, I rely on vendor documentation. Poor documentation for complex products can hurt a vendor's evaluation.

Each feature is assigned a score of 0 to 3:

Score	Explanation
3	Exceptional capabilities
2	Very good capabilities
1	Limited capabilities, difficult to do, or may require a work around
0	Minimal capabilities out of the box. The software may require customization or coding to accomplish.

This evaluation relates to Hyperion Smart View 9.0, released September 2005.

This document contains scores-only for Business Objects Live Office XI Release 2 (released November 2005) and Cognos Office Connection 8 (due March 2006). As Cognos Office Connection was pre-beta at the time of this evaluation, scores are based on scripted demos only and not hands on testing. Updated scores and textual analysis of these products are available to subscribers on BIScorecard.com.

Why Excel At All

BI and Excel have a long history, with the pendulum swinging from friend to foe. In the early 1990s, spreadsheets sped the adoption of BI and better insight. End users would take data from static green bar reports and rekey the data into a spreadsheet to analyze, filter, and chart the data. When end user BI tools entered the fray, most IT professionals thought that would end the need for spreadsheet-based analysis. It didn't. Vendors, BI professionals, and end users alike have spent the last decade trying to figure out what kind of relationship BI and spreadsheets should have.

As part of a research report I co-authored (Enterprise Business Intelligence: Strategies and Technologies for Deploying BI on an Enterprise Scale, TDWI July 2005), one manufacturing company identified 850,000 Excel spreadsheets residing on corporate servers. These spreadsheets, with stale data, manipulated data, unaudited formulas, and limited security are often at the core of many business decisions. Executives at this manufacturing company have since mandated the use of standard BI technologies instead of spreadsheets. "Managers became adept at hedging the numbers within Excel spreadsheets. Executives got tired of all the hedges and just wanted the real numbers."

With Sarbanes-Oxley requirements, eliminating such chaos is increasingly critical. Fortunately, with many of the latest approaches to spreadsheet integration, enterprise BI and Excel are increasingly friends once again. Companies that have been burned in the past by "spreadmarts" may be skeptical of facilitating the use of spreadsheets with BI. The skepticism is warranted. However, there are certain features that allow BI and spreadsheets to work together in a managed way. When leveraged correctly, spreadsheet integration can help extend the reach of BI for several reasons:

Familiar Interface

Users have little time to learn new tools. A disproportionate amount of time is spent *accessing* data rather than *analyzing* information. A familiar interface such as Excel allows BI users to be more productive, requiring little to no retraining.

Better charting

Excel charts and all the controls over scaling, axes, labels, have become a de facto standard against which BI tool vendors are often measured. If the BI tool doesn't provide robust charting capabilities, then it's clear that users will want to export the data to Excel to access its charting capabilities. Some BI vendors do provide superior charting capabilities than Excel, but for others vendors, Excel is the standard.

Better statistical functions

With the exception of Hyperion Interactive Reporting and MicroStrategy, most of the BI vendors lack advanced functions such as standard deviation within the end user BI tool. When users need these functions, then here too they will export the data to Excel.

Disconnected briefing books

Excel's ability to have multiple worksheets stored in one workbook file makes it appealing for management briefing books. Managers can access all their data, perhaps populated from

multiple data sources and queries in one file, offline. Few BI vendors can replicate this functionality natively. Dashboard capabilities are a robust alternative, but often require connectivity. Here, the manual processes to build Excel-based briefing books must be carefully evaluated against alternative solutions. A few vendors reviewed here offer spreadsheet add-ins that can help automate the process of building and refreshing Excel-based briefing books.

There are other often-cited reasons for why users want Excel integration that I consider less valid. In these circumstances, Excel integration can add to data chaos, and companies must first fix problems in the BI process:

Ability to "massage" the data

"Massaging" the data includes resorting, filtering, creating formulas, and in some cases, fixing bad data. Fixing erroneous data should ideally be done earlier in the BI process. Resorting and filtering data is another situation entirely, a capability I broadly refer to as interactivity. Report consumers often will view a pre-built report and then need a slightly different view of that report. Many leading BI suite vendors allow for report consumers to perform such interactivity against a published report, without having to launch a full blown authoring tool. Cognos ReportNet 1.1, unfortunately, still lags in this capability. The degree of interactivity varies widely (see Reporting criteria), but one thing is clear: when the BI tool lacks this capability, users will export the data to Excel to resort and filter. If they are exporting to Excel to correct data errors, then you have a problem elsewhere in the BI process and spreadsheet integration contributes to multiple versions of the truth.

Reduced licensing costs

Companies have already incurred Excel licensing costs. If they can minimize the number of BI users by better leveraging Excel, then the theory goes that they can save on BI licensing costs. However, BI vendors are increasingly broadening the definition of "user". A BI user is no longer an individual who logs into the BI tool, but rather, any user who receives output (including spreadsheets) from the BI tool. This is a nonissue for customers and vendors who have server-based licensing but a concern for customers who have named user licensing.

Approaches to Office Integration

There are several approaches to delivering Office integration:

- Add-Ins which allow users to stay within the Microsoft Office environment and access and refresh data via the BI environment

- Export in which users log on to the BI environment and then export data

- Web-based spreadsheet viewer that presents data to users in a spreadsheet-like format. This approach is used by IBI and Actuate.

With each approach, there is a different set of criteria to consider when evaluating BI tool capabilities.

Office Add-Ins

Business Intelligence add-ins for Excel have been around for more than a decade. Yet they've met with variable success. One of the key barriers to adoption with an add-in is that it requires a local installation. Such an installation process simply can't compete with the faster deployment times of browser-based BI. As well, client-server communication with backend databases or the BI server was often slow via Excel.

Microsoft's Smart Client technology will be game-changing for the way BI vendors approach Excel integration (see http://www.microsoft.com/office/previous/xp/webservices/smartclient.asp for more information). Smart Client technology allows Excel to communicate with the BI Server via Web Services. The add-in can be installed and updated via a Web-browser. MicroStrategy Office was the first BI product to leverage this technology. Cognos Office Connection, released in Q3 2005, also leverages it.

More than Excel

With these add-ins, BI vendors also may support updating data not only from within a spreadsheet, but also, PowerPoint, Word, or Outlook. Business Objects, Hyperion and MicroStrategy currently provide this. Cognos, Microsoft, and Oracle are not yet there.

Breadth of data sources

The ideal solution will allow you to query any BI content whether relational or OLAP. The reality is that many of the current add-ins allow users to access only a portion of the content available from the BI suite.

Suite Integration and Reusability

Look for an add-in that is fully integrated with the BI suite and re-use's the meta data (business views), reports, security, and server environment.

New Queries

Although an existing BI report is a good starting point, consider if users need the flexibility to author new queries within the Excel environment. If users know from the start that their end goal is to get the data into Excel, it is a tedious workflow to first switch back to the BI authoring environment to build a report and then access the BI add-in. Vendors vary significantly in their ability to fulfill this requirement and capabilities often depend on the data source accessed. For example, Hyperion's Smart View and Business Objects Live Office allow users to create new queries against OLAP data sources; Hyperion also allows for new queries against Planning and Financial Consolidation databases, but neither allow for new queries against a relational data source. MicroStrategy added this capability in its 1.1 release (June 2005) of MicroStrategy Office. SAS meanwhile has enabled users to create new queries against relational data sources but not leveraging the business meta data (called Information Maps) and not against its OLAP database.

Formatting

If the interface can import a live report, consider if it imports the formatting as well or if it only imports the raw data.

Tabular Data Sets and Pivot Tables

Across the industry, highly formatted documents do not always come into Excel that easily. This makes sense when you consider that a pixel-perfect document is often laid out in a page, whereas Excel is all about rows and columns. Often in this conversion process, a lot of extraneous cells may appear. Users of Crystal Reports and Actuate know this problem well. While the ability to import formatting is one criterion, it can sometimes get in the way of analyzing a tabular data set. A pixel-perfect report may look pretty on a page but may contain extraneous columns and rows, making it difficult to use Excel's Auto Filter or Subtotals.

So in many cases, users may want to access the data, but they don't want all that formatting: they want tabular sets that can be further analyzed via embedded Excel functionality.

If your BI report contains a cross-tab, it's ideal when this is presented as an Excel Pivot Table.

With this requirement, the capability may vary depending upon of you are accessing an OLAP data source or relational data source.

Formula Translation

For what-if analysis, it's ideal when the add-in converts BI report-based formulas to Excel formulas. In this way, a user can change a detail data point and it's automatically reflected in the subtotals and other calculations. Currently, very few of the BI suite vendors provide this, even via export. IBI is one of the few. Microsoft Reporting Services does in certain circumstances. When accessing OLAP data, though, Hyperion Smart View allows for what-if analysis by allowing users to incorporate formulas within the spreadsheet and do a live refresh and drill; the refresh does not destroy the formulas as in many other products.

Preservation of Excel Formulas

When you access data via an Excel spreadsheet or other Office environment, users may add formulas, charts, and formatting. They do not want all this work blown away when the query is refreshed. If users can drill from within Excel, it would also be ideal if a formula is automatically filled down with the additional data.

Charting

If Excel is the benchmark for charting capabilities, when you import a BI report, the idea is to extend basic BI charts with more options in Excel. Some of the BI tools do not bring the charts in at all, others only provide an ugly chart in which it's perhaps best just to start over, and a few better products provide a really good copy that can be further enhanced. If the chart can be imported as an Excel Pivot Chart, this further facilitates analysis.

64,000 Row Limit

I have mixed feelings about this requirement: whenever a user wants to retrieve more than 64,000 rows of data, I can't help but wonder if they are creating a mini spreadmart. At the same time, this Excel limitation has to be handled by the BI tool. Some vendors will automatically create a new worksheet when the number of rows exceed this limit. The important thing to consider is what happens when you reach this limit: truncating the data without any kind of error message is not acceptable.

Save to Repository

Being able to refresh data directly from a spreadsheet is only the first step in ensuring one version of the truth. Ultimately, whatever context, formatting, formulas, charts, and so on that users add in the spreadsheet should be resaved to the central BI repository so that it is secure and sharable. While there is talk in the industry on how Office 12 may change this situation, it's still too far into the future for companies and vendors not to have an acceptable solution today.

Spreadsheet Export

Exporting the data from the BI environment to a spreadsheet is another means of allowing users to work with BI data in a spreadsheet. An export is ideal when it is a one-time analysis or when the BI vendor does not support accessing the full BI content from the add-in.

Some of the same features you want in an add-in are also important for exporting. You will find significant differences, though, in add-in capabilities and export capabilities so be clear on what your ideal usage scenario is.

Scheduled export

As BI vendors increasingly improve their scheduling capabilities, many have added the ability to schedule an export to Excel. Ideally, the scheduling capabilities allow the spreadsheet to be sent automatically as an email attachment.

Charting

While many of the add-ins or smart clients will import a BI-report based chart and allow you to extend it with Excel's charting capabilities, there is a greater disparity in capabilities when you are doing a one-time or scheduled export. Business Objects Web Intelligence and full client (not Crystal Reports) was one of the first to export a native Excel chart. Cognos ReportNet 1.1 later followed. Many products still export the chart as an image, of limited use in Excel but better suited for PowerPoint when a chart is needed as part of an overall presentation.

Spreadsheet integration with Hyperion Essbase (rebranded Analytic Services in System 9) has always been nothing short of excellent. In fact, the spreadsheet was the initial primary interface to the OLAP platform while Web Analysis (formerly Analyzer) was added later through acquisition. With the release of Hyperion System 9, the vendor offers an updated office add in: Hyperion Smart View. Of all the Office add-ins from BI vendors, Smart View has the broadest data access that includes Planning, Financial Management (for consolidations), Analytic Services (Essbase), and the BI+ Repository which includes reports from its financial reporting, production and interactive reporting modules, as well as Web Analysis. While the real-time access to multidimensional data sources is best of breed, its access to relational data lags competitors' solutions. The following table evaluates Hyperion's Smart View capabilities according to the criteria discussed in the preceding section.

Spreadsheet Integration	Hyperion	Business Objects	Cognos
Add-In	Smart View 9	Live Office XI R2	Office Connection (due 3/06)
Smart Client Technology	No	No	Yes
Excel 2000 support	Yes	Yes	No
Additional Office Support (PPT, Word)	2	2	1
Breadth of data sources	3	2	2
Suite integration, reusability, consistency	1	2	2
New Queries (relational and olap)	1	1	2
OLAP Drill & Pivot	3	2	0
Formatting retained	0	1	2
Tabular data sets & Pivot Tables	2	2	
Report formulas translated	0	0	0
New formulas preserved	2	0	
Charting	1	1	1
64K Row Limit			0
Save To Repository	2	2	2
Spreadsheet Export from Report			
Scheduled spreadsheet	0	2	2
Export tabular data set	2	2	2
Export Chart	1	2	2
Export Formulas	0	0	0
Export Formatting	0	2	2

Add-In Capabilities

Hyperion SmartView integrates with all of the Microsoft Office products including Excel, PowerPoint, Word, and Outlook from version 2000 and higher. Smart View replaces the previous Essbase Spreadsheet Services. The same drop-down menu appears in each Office product. Integration with Outlook is only when Word is used as the editor.

Smart View leverages the same security and server infrastructure as the rest of Hyperion System 9.

New Queries

From within Smart View, users can build new queries against multi-dimensional data sources (Planning, Financial Management, Analytic Services); they cannot create new queries against relational data sources or execute interactive or production reports.

OLAP Drill and Pivot

With a simple double-click, data is brought into an Ad Hoc Grid. Users drill-down by double clicking on any dimension member. A powerful Point of View Manager provides slice and dice capabilities via simple drop-down menus added to the Excel toolbar. For performance and scalability reasons, users control which and how many members appear in these drop downs so that, for example, a million individual customer names are not inadvertently added to the drop-down menu. As users explore information for particular members, these members then automatically appear within the Point of View drop downs. A Member Selection dialog allows users to select individual members within a hierarchy, or the children, or base members. A Find within hierarchy is useful for finding individual members within long hierarchies. Users can save their selections as a Point of View so that when they next access the worksheet, the member selections are automatically filtered.

Users cannot create new queries that access relational data sources (Interactive or Production Reporting). As well, when users access these report types, the query is not executed. Instead, users are importing a copy of the report and data as it is stored in the BI+ Repository. While the workflow is different from a one-time export, the end result is similar. Compared to spreadsheet add-ins from competitors, this is Smart View's biggest limitation. The vendor plans to support both capabilities in the next release due Q3 2006.

Re-usability and Consistency

One of the strengths of Smart View is the ability to import any BI+ and BPM content; however, when accessing the BI+ Repository, the content imported varies per report type.

Also, for a Smart View user to see a new interactive report, the interactive report must be saved as a job. Therefore, if a user created a new report within the Web Workspace, it does not appear within SmartView; instead, a power user would have to use the full client Report Designer to publish the report as a job.

Although Smart View can access a variety of BI content across the MS Office suite, the capabilities are not consistent. When trying to import an interactive report, only charts can be imported into Word or PowerPoint (not a tabular data set). However, when importing from a Financial or Web Analysis report, the tabular data set can also be brought into PowerPoint as an image. Charts are not brought in from Web Analysis Reports. Importing a Financial Report into Excel works correctly as a grid but not when you select to import formatting as well. In all cases, the charts are brought into Office as an image and not a native object that can be enhanced within Office. This also should change in the next release.

Formula Preservation

When accessing a multi-dimensional data source, users can insert formulas into the spreadsheet. These formulas can be in between source columns. As users drill-down the formulas are preserved but not filled. Formula preservation is a strength for Hyperion as,

when most other vendor add-ins refresh the data, the refresh process overwrites the data. Smart View takes formula functionality even further through the use of a feature called Functions, available for Analytic Services and Financial Management. With Functions, a user can create a formula that retrieves the data for one member, for example, and nest it within an Excel-based formula. The value can be dynamically refreshed.

Export Capabilities

Tabular data sets

While viewing a pivot table or list section within an Interactive Report, data can be exported as a tabular data set to Excel. However, this cannot be done while viewing a formatted report or dashboard.

Export Chart

In Hyperion Intelligence 8.3, charts were not exported to Excel. With System 9, a chart is sometimes imported as an image and inserted as a separate worksheet. When you export the chart, it also inserts a worksheet with the raw data. This is an improvement over 8.3, but from a competitive viewpoint, a weakness compared to other BI vendors who export the chart as an Excel chart that can be modified. From a Production Report, charts are not imported into Smart View. When accessing an Interactive Report, the chart import often failed and only the raw data was imported.

Export Formulas

Formulas are not exported to Excel (even though marketing literature claims otherwise). When retrieving an Interactive Report that contains computed items, those computations appear as values in Excel. Also, the data is imported in a way that does not allow users to create formulas against numeric values; it may be that numbers are imported as text, but all sums equal 0.

Export Formatting

Formatting is not exported to Excel.